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- (71) Applicant (*for all designated States except US*): ISIS INNOVATION LIMITED [GB/GB]; Ewert House, Ewert Place, Summertown, Oxford OX2 7SG (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): SINCLAIR, John, Charles [GB/GB]; Laboratory of Molecular Biophysics, University of Oxford, South Parks Road, Oxford OX1 3QU (GB). NOBLE, Martin, Edward, Mantyla [GB/GB]; Laboratory of Molecular Biophysics, University of Oxford, South Parks Road, Oxford OX1 3QU (GB).
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(54) Title: PROTEIN LATTICE

(57) ~~Abstract~~ Protein lattice (1) having a regular structure with a repeating unit repeating in three dimensions may have many uses, for example to support an array of macromolecular entities for x-ray crystallography. The repeating unit comprises protein protomers (2) which each comprise at least two monomers (5, 6) fused together. The monomers (5, 6) are each monomers of a respective oligomer assembly (3, 4) into which the monomers are assembled for assembly of the protomers into the lattice. The first oligomer assembly (3) has a set of rotational symmetry axes extending in three dimensions. In said protomers (2), further monomers (6) fused to said first monomers (5) are monomers of respective further oligomer assemblies (4) which have a rotational symmetry axis of the same order as a respective one of said set of rotational symmetry axes of said first oligomer assembly (3). Thus, the repeating unit includes protomers (2) with the first monomers (5) of the protomers (2) being assembled into said first oligomer assembly (3) and, in respect of respective ones of said set of rotational symmetry axes, with further monomers (6) of the protomers (2) fused to respective first monomers (3) being assembled into respective further oligomer assemblies (4). As a result of the symmetry of the oligomer assemblies (3, 4) said rotational symmetry axis of said respective further oligomer assemblies (4) is aligned with the respective rotational symmetry axis of said first oligomer assembly (3). Thus, an N-fold fusion between the oligomer assemblies (3, 4) is produced and the rotational symmetry axes of the oligomer assemblies (3, 4) define the symmetry of the lattice.

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